First Annual Smoke Management Meeting

14-15 March 2005

Arizona Department of Environmental Quality

And

Interagency Smoke Management Program

Annual Emission Goal

- Annual Emission Goal
  - Section 309 of the Rule specifically requires the establishment of annual emission goals that minimize emission increases from fire to the maximum extent feasible
- The WRAP defines the Annual Emission Goal as:
  - a quantifiable value that is used to measure progress each year toward the desired outcome of achieving the minimum emission increase from fire.
- Establish Annual Emission Goals:
  - based on the utilization of currently available emission reduction techniques

Annual Emission Goal

- A) Annual emission goals are required for states under Section 309 of the Regional Haze Rule.
- B) Annual emission goals will achieve the minimum emission increase from fire. Annual emission goals are quantifiable values that are distinct from emission limits.
- C) Annual emission goals are applied to all fire sources, excluding wildfire.

Annual Emission Goal

- D) The minimum emission increase from fire is accomplished through the optimal application of emission reduction techniques, which provides the basis for annual emission goals.
- E) The use of emission reduction techniques to achieve annual emission goals is subject to economic, safety, technical and environmental feasibility criteria, and land management objectives.
- F) States, tribes or the designated authority will establish annual emission goals in cooperation with federal land management agencies and private entities on a yearly basis.
- G) States and tribes will need to develop a procedure for verifying the use of emission reduction techniques and for tracking the achievement of annual emission goals.

Annual Emission Goal

- Implementation of AEG
  - emission goals are developed on an annual basis, therefore, they need to be based on a measure that can be determined in one year's time
  - AEG will be determined each year, through a collaborative process between land managers and ADEQ
  - AEG is not an emission limit, the goal is based on the sole purpose of minimizing emission increases from fires to the maximum extent feasible.
  - the goal will focus on the efforts to minimize emissions
  - control of fire emissions is accomplished by using ERTs

Annual Emission Goal

- Implementation of AEG
  - Annual registration provides information to establish the AEG
  - Calculating the emissions averted from the use of ERTs
  - AEG is the sum of emissions averted from all fire projects where ERTs are used for the upcoming year

Annual Emission Goal

- Option 1
  - An estimate of emissions averted may not be feasible if ERT emission factors are not available.
  - In this case, the annual emission goal is the percent of total acres on which ERTs are used:
    - AEG = sum of acres in ERTs are used / sum of total acres

Annual Emission Goal

- Option 2
  - Calculate emissions without ERTs
  - Calculate emissions with ERTs
  - The emissions averted is the AEG
  - Use annual registrations to set the goal
  - $PM_{2.5}$= (acres X FL X EF) / 2000
    - $PM_{2.5}$ =(1000(a) x 20(t/a) x 24.1 (lbs/ton))/2000(lbs/tons) =241 tons
    - $PM_{2.5(\text{emissions averted})}$ = 241 tons x 43% = 103.63 tons
    - $PM_{2.5}$ with ERT = 137.37 tons

Annual Emission Goal

- Tracking AEG
  - Revise tracking system to include:
    - N and A
    - ERT emission factors
  - Update accomplishment and registration forms
  - Was the AEG achieved
    - Compare AEG based on annual registration to burns that used ERTs

Emissions Reduction Method	Used Primarily for Local Smoke Impact Reduction	General Emission Reduction Benefits	Percent PM2.5 Emission Reduction							
			Primary Fuel Type							
			Grass	Ref	Brush	Ref	Timber	Ref	Crop (ag)	Ref
Pre-Burn Fuel Removal							42%	1		
Firewood Sales										
Mechanical Processing										
Biomass Utilization										
Biomass for Electrical Generation										
Ungulates			67%	1						
Burn More Frequently					83%	1				
Underburn Before Litter Fall										
Burn Before Green Up									46%	4
Backing Fire (grass, pine needle litter)			67%	2			45%	2	50%	3
Maintain fire line intensity (grass, PNL)			50%	2						
Isolating Fuels										
Concentration Burning										
Chemical Treatment										
High Moisture in Large Fuels							43%	1		
Moist Litter and Duff							26%	1		
Burn Before Large Activity Fuels Cure							44%	1		
Aerial Ignition/Mass Ignition							10%	1		
Rapid Mop-Up							10%	2		
Pile and Windrow Burning							13%	1		
Pile Burning							70%	2		
Air Curtain Incinerators									85%	3
Mosaic Burning							50%	1		

Key for ERT benefit categories

	fuel reduction
	combustion efficiency improvements (lower EF)
	reduce fuel consumed
	lower EF and reduce fuel consumed
	reduce fuel consumed / maybe some increase in EF

References:

1 Smoke Management Guide for Rx and Wildland Fire, 2001 USFS
2 FEJF ERT % Reductions - wildland fire (MACTEC)
3 FEJF ERT % Reductions - agricultural burning (MACTEC)
4 Air Sciences Inc., Wheat Grass Emission Burning Study, July 200

31 March 2005

Notes: When range is given for PM2.5 emission reduction, median is use